REMARKS/ARGUMENTS

This reply is in response to an Office Action mailed November 17, 2005. The Examiner made this Office Action Final.

I. THE INFORMATION DISCLOSURE STATEMENT

In the Office Action, the Examiner refused to consider the prior art reference designated BA in the Information Disclosure Statement mailed July 20, 2004. The Examiner refused to consider this reference because the publication date was not indicated on the Information Disclosure Statement. A supplementary IDS is submitted with this RCE in order to correct the applicant's oversight. The publication date, as noted in the IDS and in the copy of the relevant portions of the reference previously submitted, is the year 2000. Please note that the publication year was the only date noted on the reference. A copy of the reference is provided with the new IDS, although a copy of the reference was provided with the earlier IDS in which the reference was identified.

II. RESPONSE TO EXAMINER'S REJECTIONS

In the Official Action, the Examiner maintained his rejection of claims 8-11 under 35 U.S.C. § 102(b). The Examiner cites U.S. Patent No. 5,536,988 to *Zhang et al.* as the basis for this rejection. The applicants were surprised by the Examiner's rejection given that the Examiner states, on page 6 of the Official Action that "the Examiner takes the position that *Zhang et al.* does not disclose the gridded microwave tube device including controlled cathode emission." This statement, taken at face value, appears to indicate that the Examiner agrees with the applicants that *Zhang et al.* does not disclose or suggest the cathode emission control grid recited in claim 8.

Given the Examiner's statements, it appears the Examiner has not articulated a sufficient basis for the rejection of claim 8 and the claims dependent thereon. For this reason alone, applicants submit that the Examiner should

withdraw the rejections based upon the *Zhang et al.* reference, and the case should be allowed.

In the event that the Examiner's comments are a typographical error, the applicants respectfully traverse the Examiner's rejection. The Examiner apparently believes that *Zhang et al.* describes emission of the electrons from the cathode as being controlled by the grid support structure described in *Zhang et al.* This emission, according to the Examiner, is controlled by focusing or accelerating the emitted electrons from the cathode. The Examiner cites absolutely no support for this conclusion from *Zhang et al.*, other than the existence of the gridded support structure supporting the cathode elements.

As noted in applicants' previous reply, the grid (282) in *Zhang et al.* is merely a support structure and provides no modulating function. The Examiner, in his rejection, fails to articulate how the gridded support structure in *Zhang et al.* provides the modulating function that, the Examiner asserts renders applicants' invention obvious. The Examiner merely makes a broad conclusory statement that the emission of the electrons from the cathode is being controlled by the grid. This is completely contrary to the express disclosure in *Zhang et al.* reference. From the disclosure of *Zhang et al.* it is clear that the gridded structure is merely a support structure and does not provide the function of an emission control grid. The gridded structure 282 is depicted in FIG. 2 and is described at column 11, line 29 through column 12, line 48. Throughout this description, it is clear that the structure underlying the cathodes elements 22 is merely a support structure. As such, it does not provide the modulating function of an emission control grid.

Note that, in applicants' specification and drawings, the control grid 14 (FIG. 1B) is electrically connected to

contact 18. As noted on page 10 of applicants' specification, "a weak microwave signal to be amplified is applied between the grid and the cathode." The applicants go on to state that, "the signal applied to the grid controls the number of electrons drawn from the cathode."

The Examiner has not cited any support in the *Zhang et al.* reference for the Examiner's conclusion that the grid described in *Zhang et al.* performs such a modulation function. While the Examiner states that the grid in *Zhang et al.* "focuses or accelerates" the emitted electrons, the Examiner has not cited support in the *Zhang et al.* disclosure for this conclusion. The applicants submit that this is because no such support is forthcoming. The Examiner has not identified what aspect of the grid in *Zhang et al.* focuses and controls cathode emission. This is because there is no such description in *Zhang et al.* The *Zhang et al.* structure is designed to physically support the cathode elements, and is not configured, expressly or inherently, to provide the modulating function disclosed in claims by applicants.

Because the Examiner has not cited anything in the *Zhang et al.* reference that supports the conclusion that *Zhang et al.* discloses and suggests the cathode emission control grid disclosed and claimed by applicants, the applicants respectfully request that the Examiner withdraw his rejection of claims 8-11 as anticipated by *Zhang et al.*

The Examiner also maintained his rejection of claims 12-14 as unpatentable under 35 U.S.C. § 103(a). Specifically, the Examiner states that claims 12-14 are obvious in view of the combination of *Zhang et al.* in view of *Komatsu*.

At the outset, applicants note that the Examiner has failed to make a *prima facie* case for obviousness based on this combination of references. Specifically, the Examiner has not indicated any suggestion or motivation in the references

themselves to combine the teachings of *Zhang et al.* and *Komatsu*. Pursuant to MPEP 706.02(j), the Examiner is required to set forth an explanation of the reasons why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification.

The applicants made this observation in response to the Examiner's previous rejection. In the Final rejection, the Examiner merely reiterated his previous rejection. The Examiner did not take the opportunity to articulate what disclosure, in the cited references, would motivate one skilled in the art to combine the references as the Examiner did. The motivation for the combination put forth by the Examiner certainly does not come from *Zhang et al.*, which describes a gridded support structure. Given the placement of the disclosure in *Zhang et al.*, it is difficult to understand how it could be obvious to modify the *Zhang et al.* structure to indicate an electron collector (*i.e.* an anode) such as the one described in *Komatsu* to perform an electrode function. There is no motivation from either reference to modify *Zhang et al.* to include the collector described in *Komatsu*.

Certainly there is no such suggestion for this combination in *Komatsu*. In *Komatsu*, the "grid" electrode 6 (e.g. FIG. 7) does not perform a support function. Therefore applicants see no motivation from the references themselves that would cause one skilled in the art to modify the support grid in *Zhang et al.* to perform the additional function of controlling emissions from the cathode. The applicants submit that the Examiner's rejection is improper and should be withdrawn. To the extent that the Examiner refused to consider the prior amendment to claim 8 when making this rejection, applicants submit that currently amended claim 8, which recites a device having a cathode emission control grid, in not rendered obvious by the combination of *Zhang et al.* in view of *Komatsu*.

In the Final rejection, the Examiner again rejected claim 15, stating that the claim is obvious under 35 U.S.C. § 103(a). The Examiner cited *Zhang et al.* in view of *Bower* as the basis for his rejection. At the outset, applicants again note that claim 15 depends from claim 8. Claim 8 is patentable over *Zhang et al.* for the aforesaid reasons. Therefore claim 15 is patentable over the cited combination of reference by virtue of its dependence on claim 8.

In the Final rejection, the Examiner again rejected claims 16, 17, 19 and 20, stating that the claims are obvious under 35 U.S.C. § 103(a). The Examiner cited *Zhang et al.* as the basis for his rejection. At the outset, applicants again note that claims 16 and 17 depend from claim 8. Claim 8 is patentable over *Zhang et al.* for the aforesaid reasons. Therefore claims 16 and 17 are patentable over the cited combination of references by virtue of their dependence on claim 8.

Furthermore, these claims are not rendered obvious by *Zhang et al.* because these claims recite a surface area of the cathode and a spacing between cathode and grid, respectively. As noted by applicants in their previous reply, the only dimensions described in *Zhang et al.* are the thickness of layers used to form the support structure on which the emitters are formed. *Zhang et al.* does not disclose or suggest a distance between the cathode and the grid. Thus, the Examiner's argument that the claimed dimensions are obvious design variations does not hold. Applicants submit that *Zhang et al's.* description of a support grid adjacent to cathode elements does not render obvious an emission control grid spaced apart from such elements.

With regard to claims 19 and 20, claim 19 has been amended to be in independent form, as previously noted. Claim 19 is also amended to further describe the grid as a cathode

emission control grid. For the previously stated reasons, *Zhang et al.* does not disclose or suggest a vacuum microelectromechanical device having a cathode emission control grid. Claim 20 is patentable over *Zhang et al.* by virtue of its dependence from claim 19.

In view of the foregoing arguments and amendments, applicants submit that claims 8-20 are in condition for allowance. Favorable action is respectfully requested.

If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that he/she telephone applicant's attorney at (908) 654-5000 in order to overcome any additional objections which he might have.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

Dated: March 17, 2006

Respectfully submitted,

By _____

Richard J. Botos
Registration No.: 32,016
LERNER, DAVID, LITTENBERG,
KRUMHOLZ & MENTLIK, LLP
600 South Avenue West
Westfield, New Jersey 07090
(908) 654-5000
Attorney for Applicant

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